



Cisco Centralized WLAN Solution

Overview and How it works.....

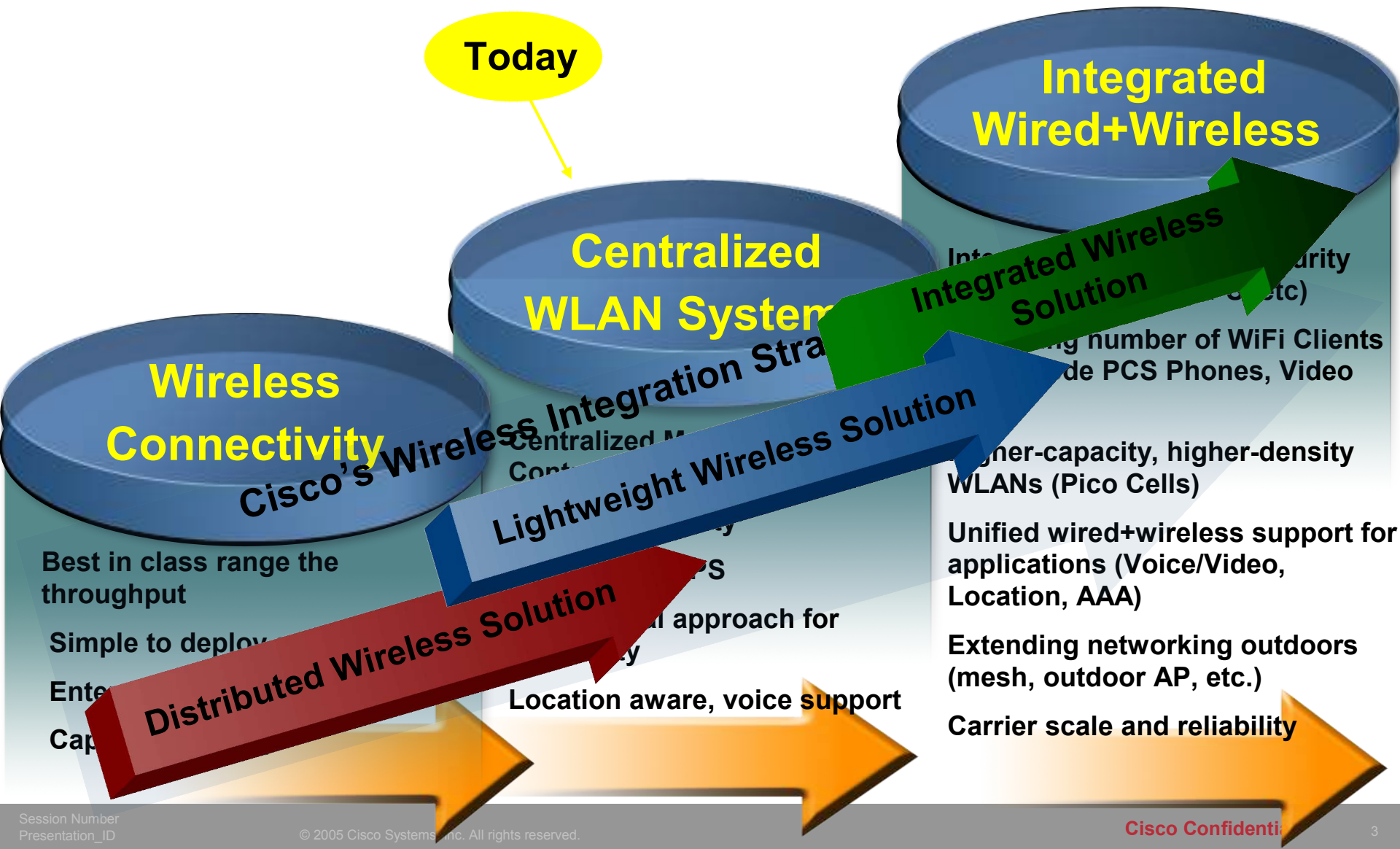
Thomas Latzer
Systems Engineer
August 2005

Wireless LANs Are Moving from Convenience to Business-Critical

- **WLAN Deployment Increasing**
 - Proven ROI and employee productivity
 - Interoperability with wide range of client devices and notebooks “Centrino Effect”
- **WLAN Concerns**
 - Pressure to reduce operational cost, particularly in the areas of training and operations
 - Network security and data protection
 - Integration of wired and wireless network (policies and administration)
- **Future**
 - Support of Advanced IP Services including VoWLAN and Location Tracking



Cisco's Wireless Technology Vision



Cisco Centralized WLAN Solution Features

- **A complete WLAN System**
 - Uniform WLAN policies across main office, branch offices, and remote offices
- **Easy to deploy and operate**
 - Full suite of WLAN management tools - from planning to operations
 - Real-time RF Management
- **Proven security for any enterprise environment**
 - Real-time monitoring and analysis
 - Integrated wireless intrusion protection
- **Best-in-class performance**
 - Designed for converged voice and data applications
- **Integrated, accurate, location tracking**
 - Advanced location tracking services option
- **Designed for heterogeneous environments**

Cisco Centralized WLAN Solution Benefits

- **Lower operational costs**
 - Easy to deploy and manage; Faster problem resolution
- **Lower capital costs**
 - Eliminate need for overlay management systems (location, wireless IDS, RF management, planning, etc.)
- **Improved network security**
 - Wireless intrusion protection, including rogue location and containment
 - Integrated with AAA and other wired services
- **Increased scalability**
 - Centrally create and enforce uniform WLAN policies across an entire enterprise
- **Enable new business applications**
 - Better visibility and control of the air space
 - Establish unique policies for converged applications

Cisco Wireless LAN Product Portfolio

Distributed Solution



CiscoWorks
WLSE

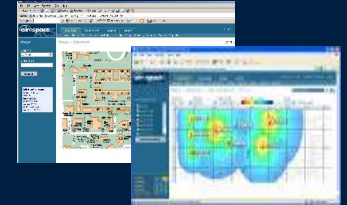


CiscoWorks
WLSE Express

Management

Lightweight Solution

Cisco Wireless
Control System
(WCS)



Catalyst 6500
Series WLSM

Control

Cisco 2000 WLAN
Controller



Cisco 4100 WLAN
Controller



Access

Cisco 1100, 1130, 1200,
1230, 1300 Access Points
Today – *Autonomous*
Future – *Hybrid*



Cisco 1000 Access Point
Today/Future –
Lightweight (LWAPP)

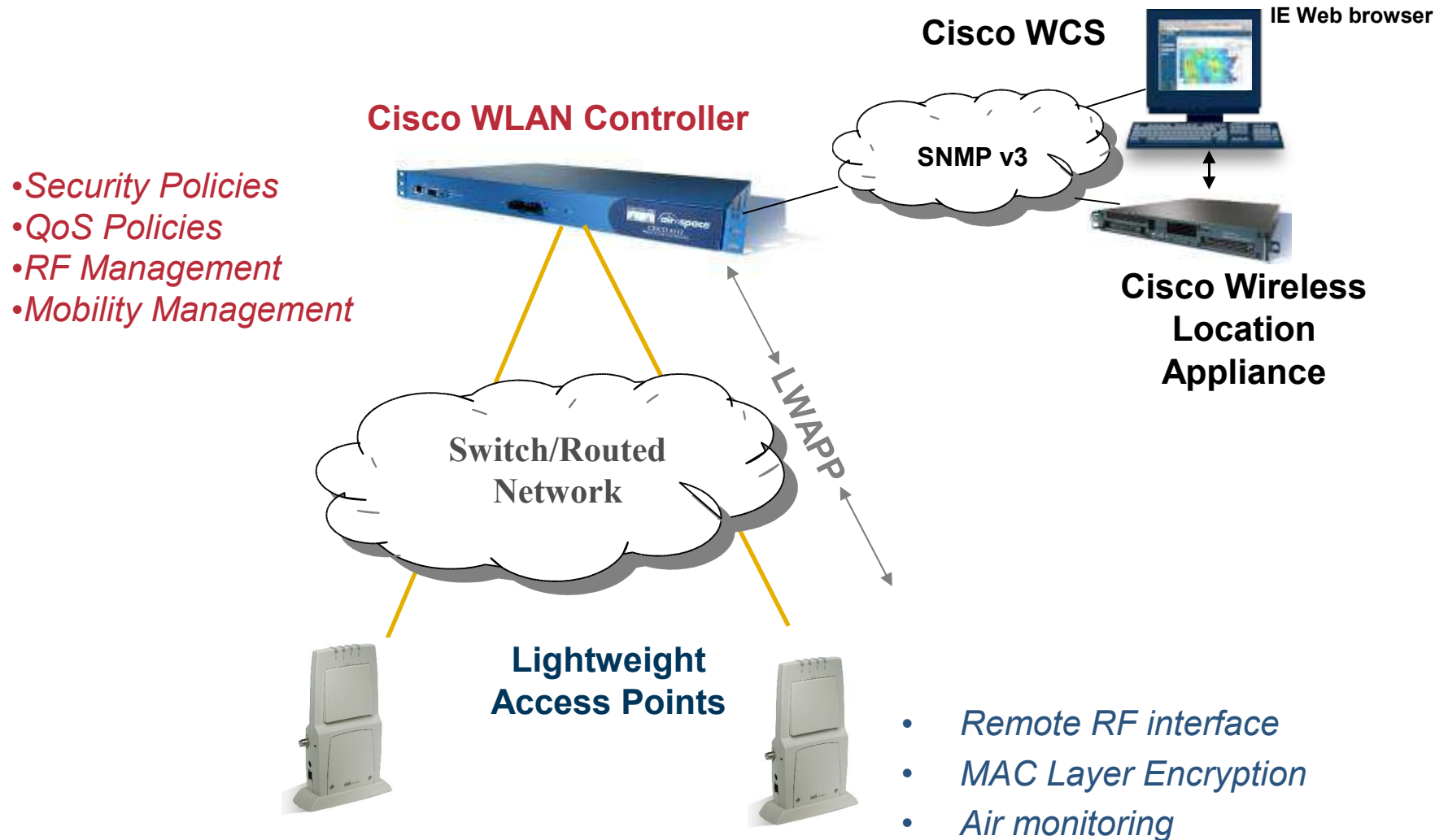


Applications

Cisco Compatible Client Devices



Cisco Centralized WLAN Solution Architecture



Systems Approach With Central Policy Control



Cisco 2000 Series - Branch

- Supports 6 lightweight access points
- 4 10/100 Mbps interfaces



Cisco 4100 Series - Core

- Supports up to 36 lightweight access points (12/24/36 AP options)
- Gigabit uplink port with redundant gigabit uplink port
- Expansion slot (Enhanced Security Module)



Cisco 4400 – Large Core

- Supports up to 100 lightweight access points (12/25/50/100 AP options)
- Up to 4 Gigabit uplink ports
- Up to 2 expansion slots (Enhanced Security Module)

All hardware includes Radio Resource Management (RRM), mobility, intrusion protection, and QoS

Custom Designed Enterprise-Class Access Points



Cisco 1010 Lightweight Access Point

- Solid range and throughput
- Real-time RF monitoring (RF management, security, location)
- LWAPP enabled (zero touch configuration)



Cisco 1020 Lightweight Access Point

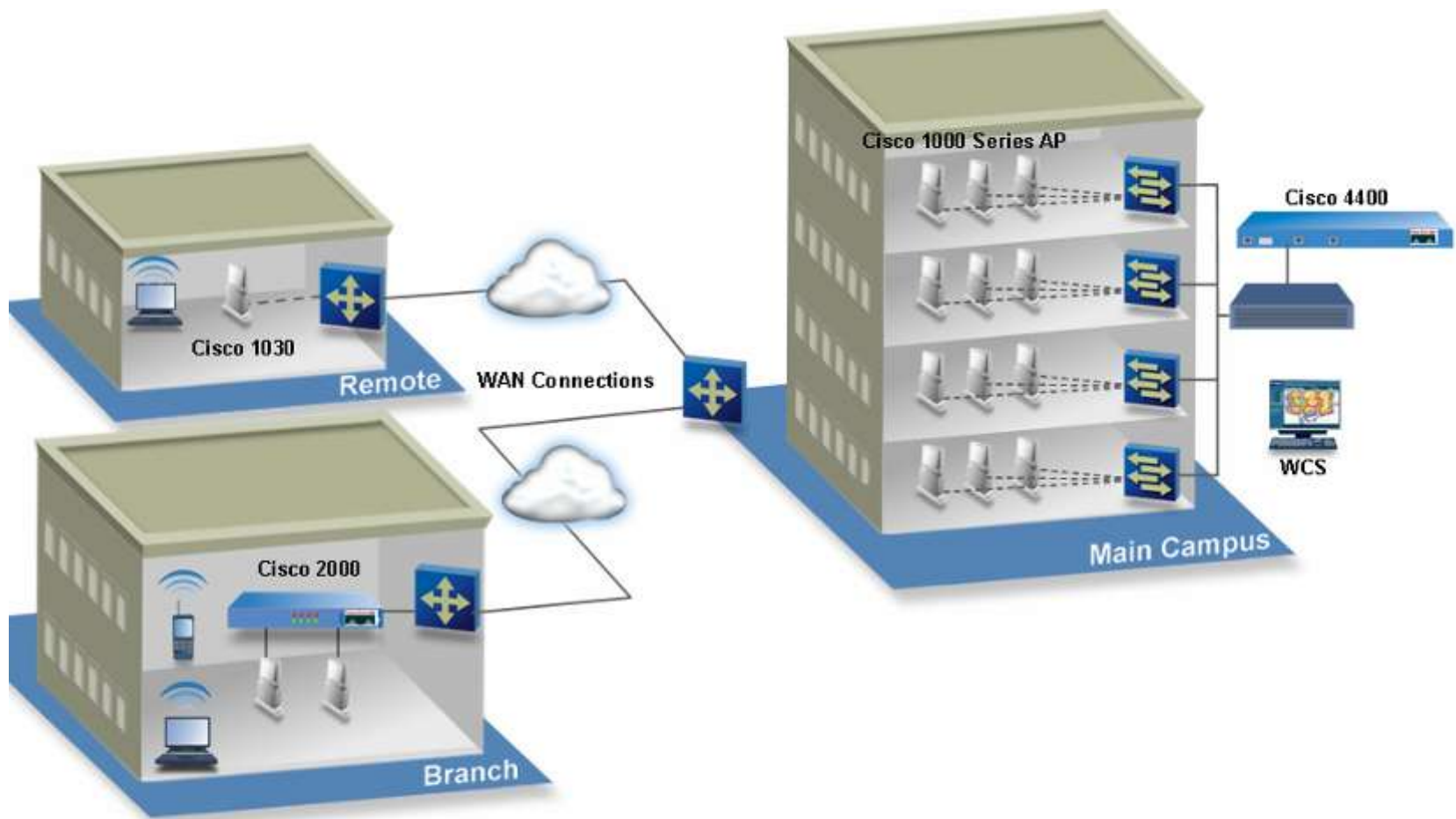
- All the same capabilities of 1010 + connectors for external antenna



Cisco 1030 Remote Edge Access Point

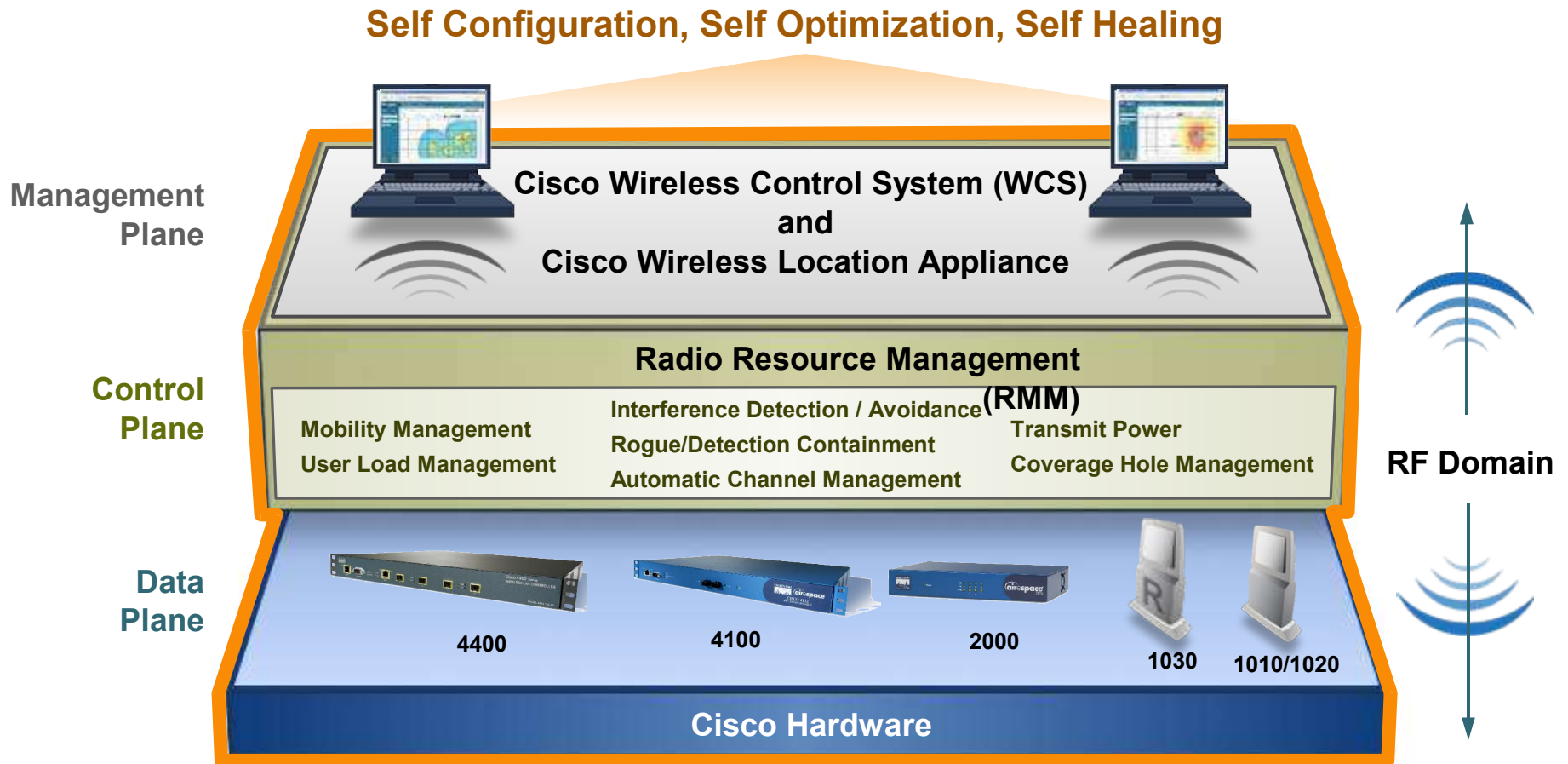
- All of the capabilities as 1020, plus:
- Centralized management & monitoring via remote WAN link
- Centralized authentication
- Localized traffic delivery

Flexible Deployment Options



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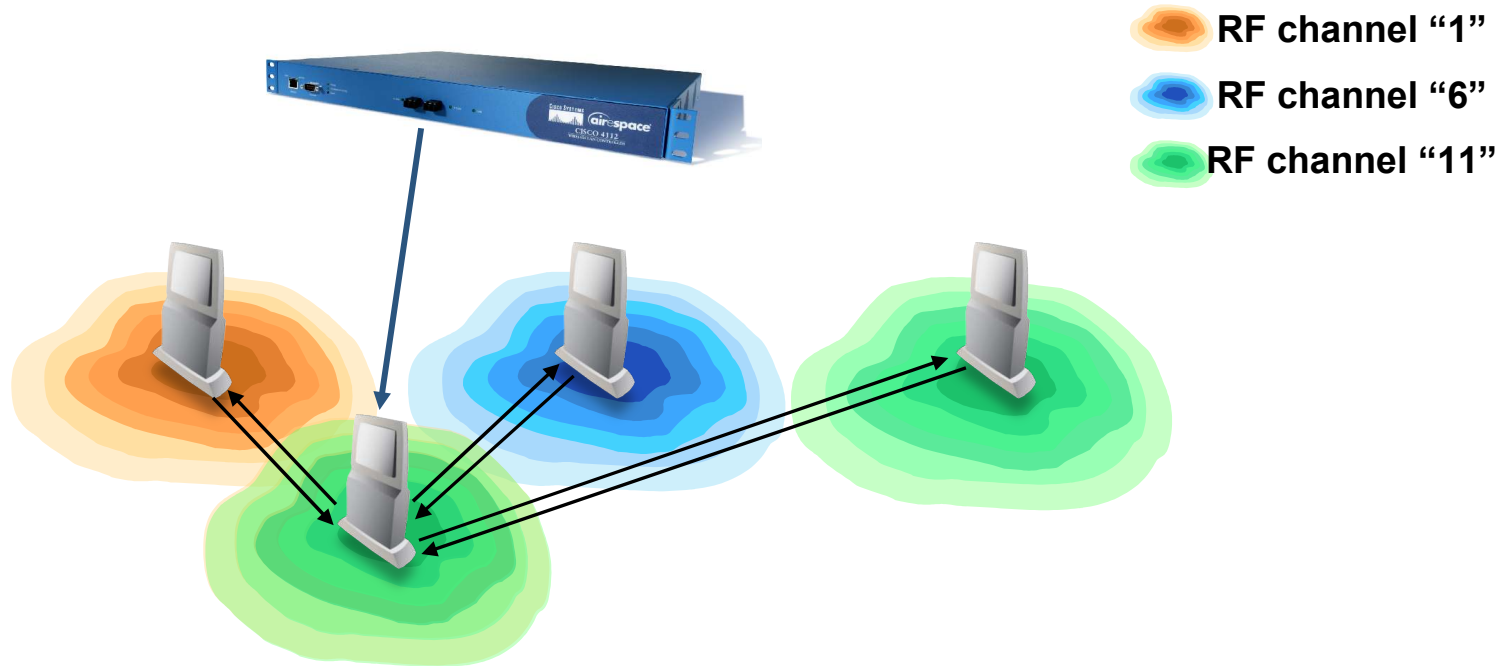
Dynamic Resilient RF Management



Real-Time RF Management

**Dynamic
Channel
Assignment**

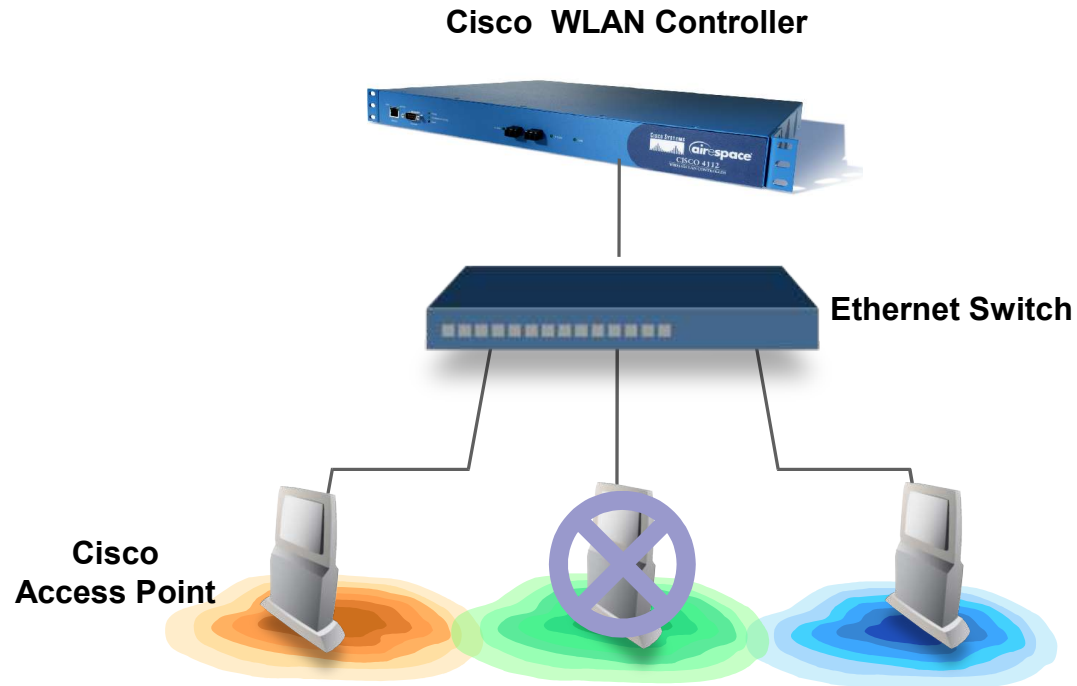
**Dynamic
Power
Optimization**



- Eliminate coverage holes
- Optimize coverage area
- Avoid interference/Improve performance
- Reduce "hands on" WLAN mgmt

No Single Point of Failure

AP Redundancy

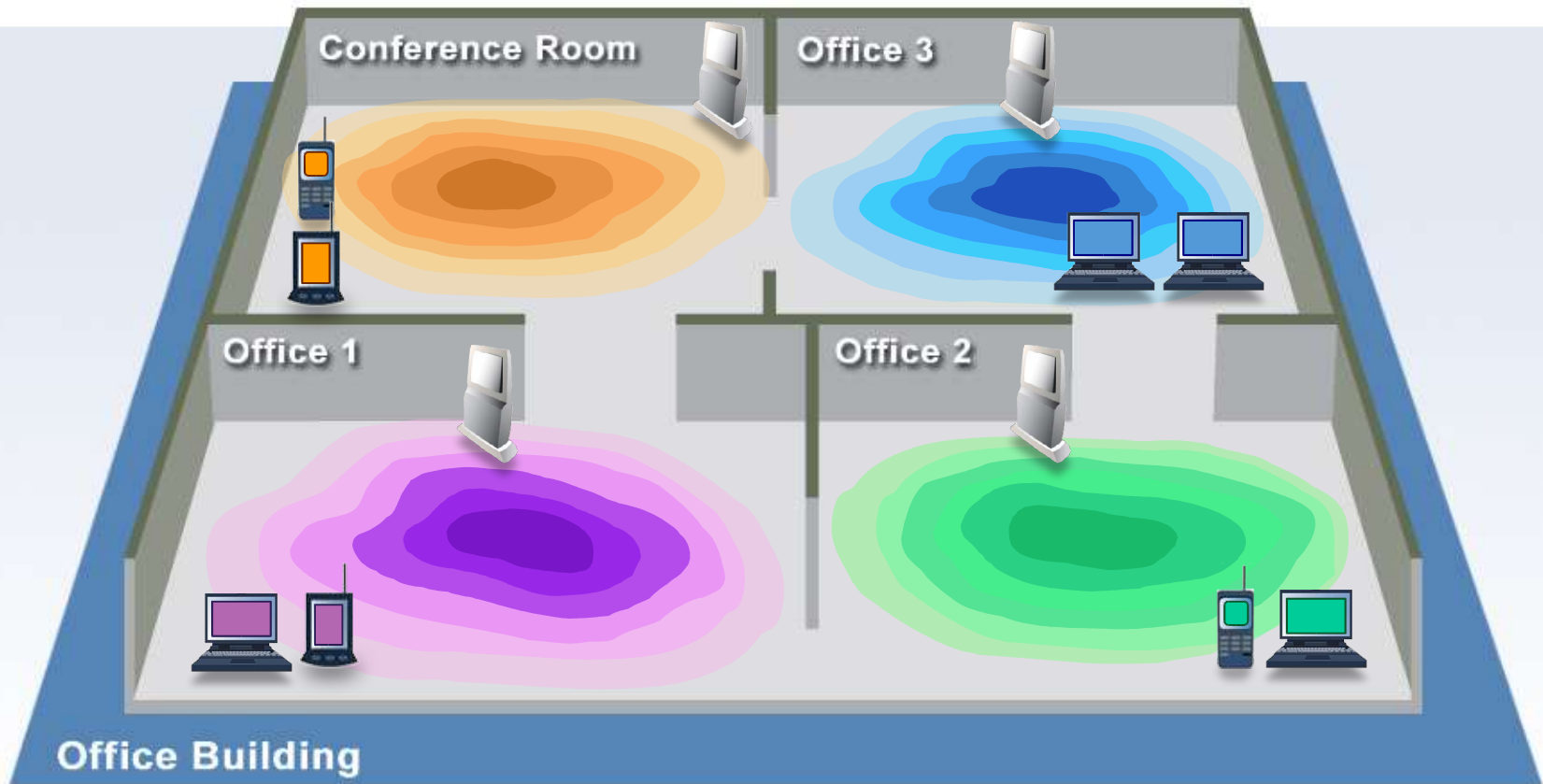


Better Network Performance

Dynamic Load Sharing



Solving Performance & Capacity problems in high density areas (e.g. conference rooms, cafeteria)...

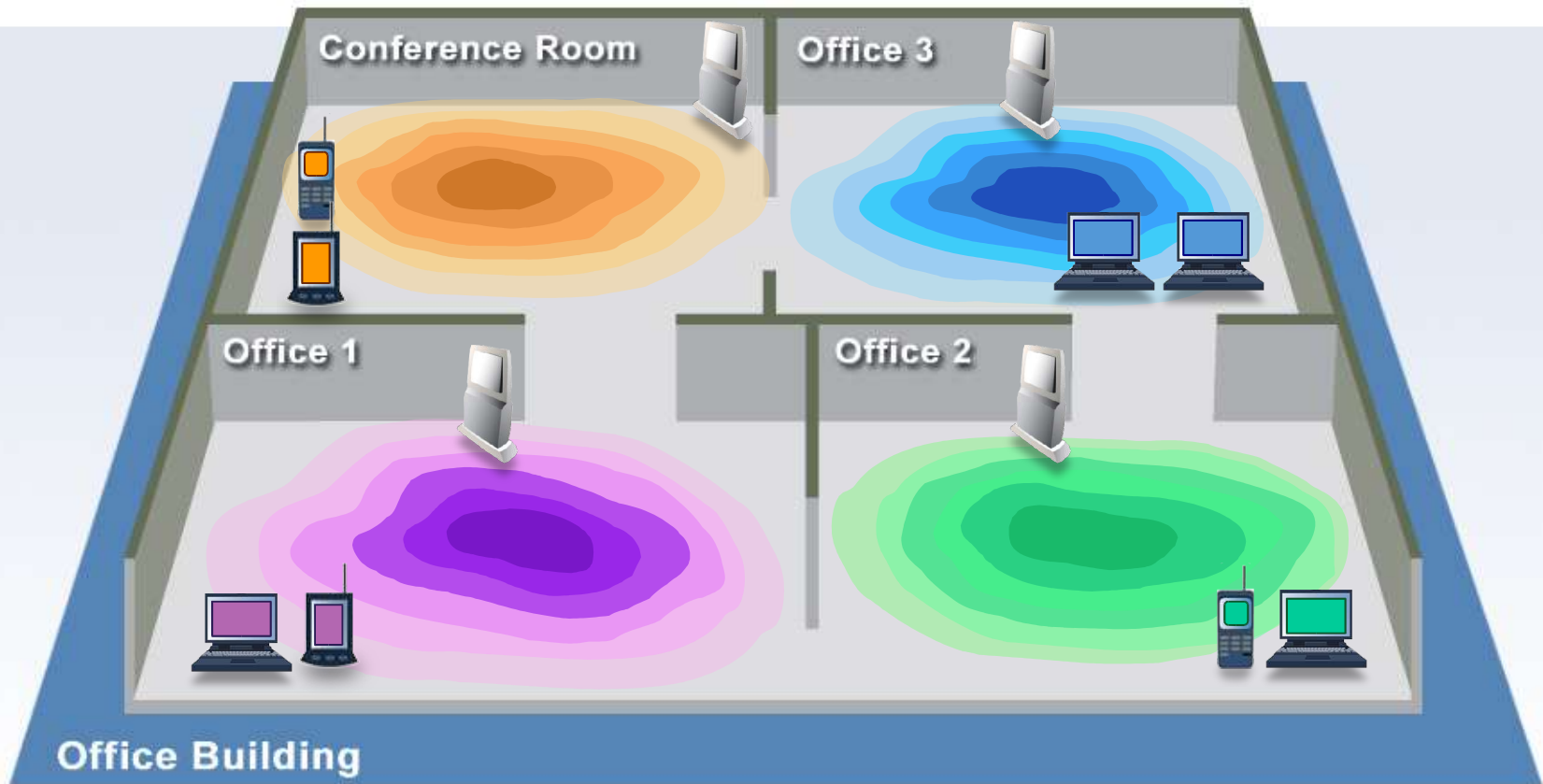


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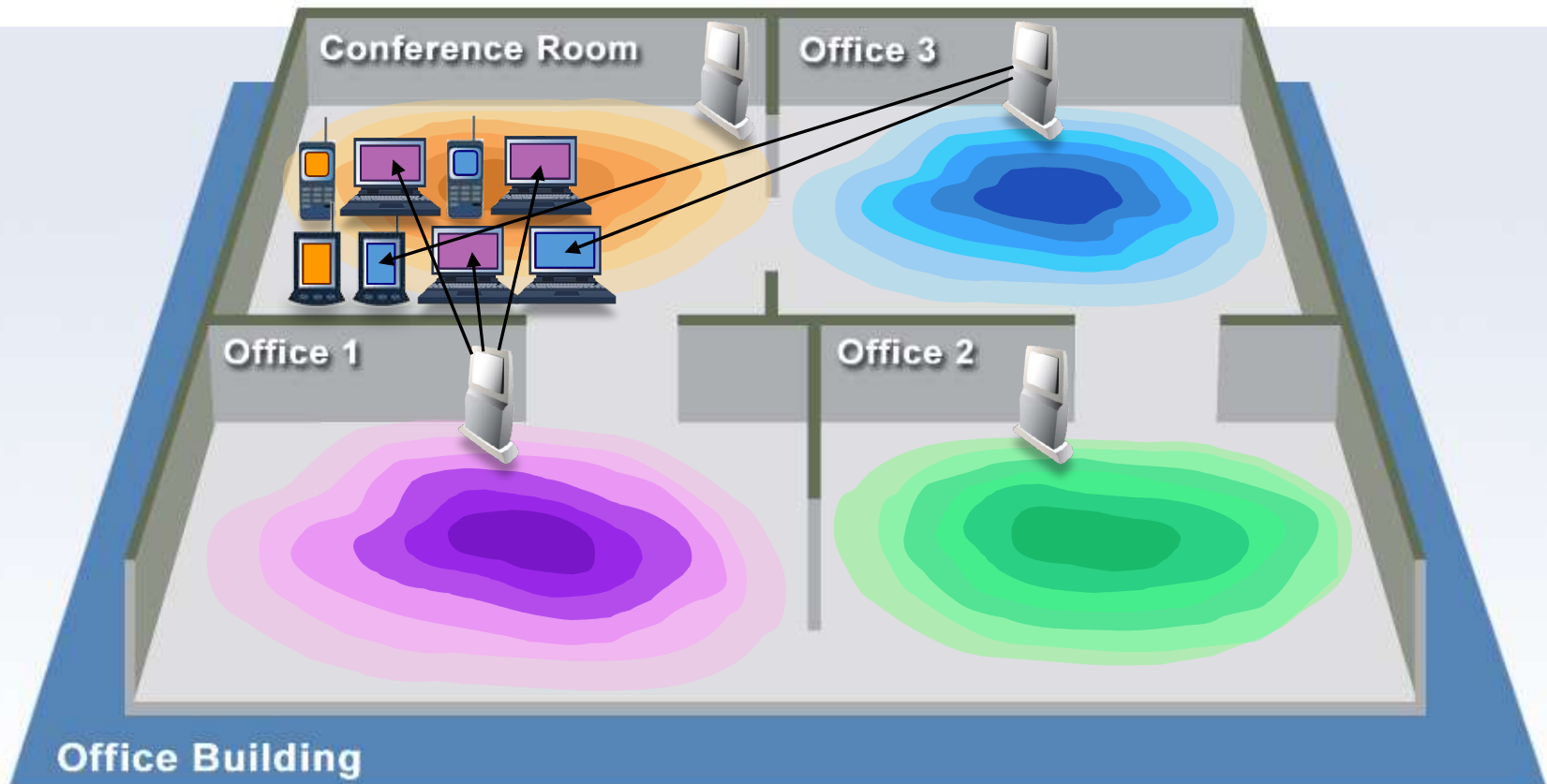


Better Network Performance

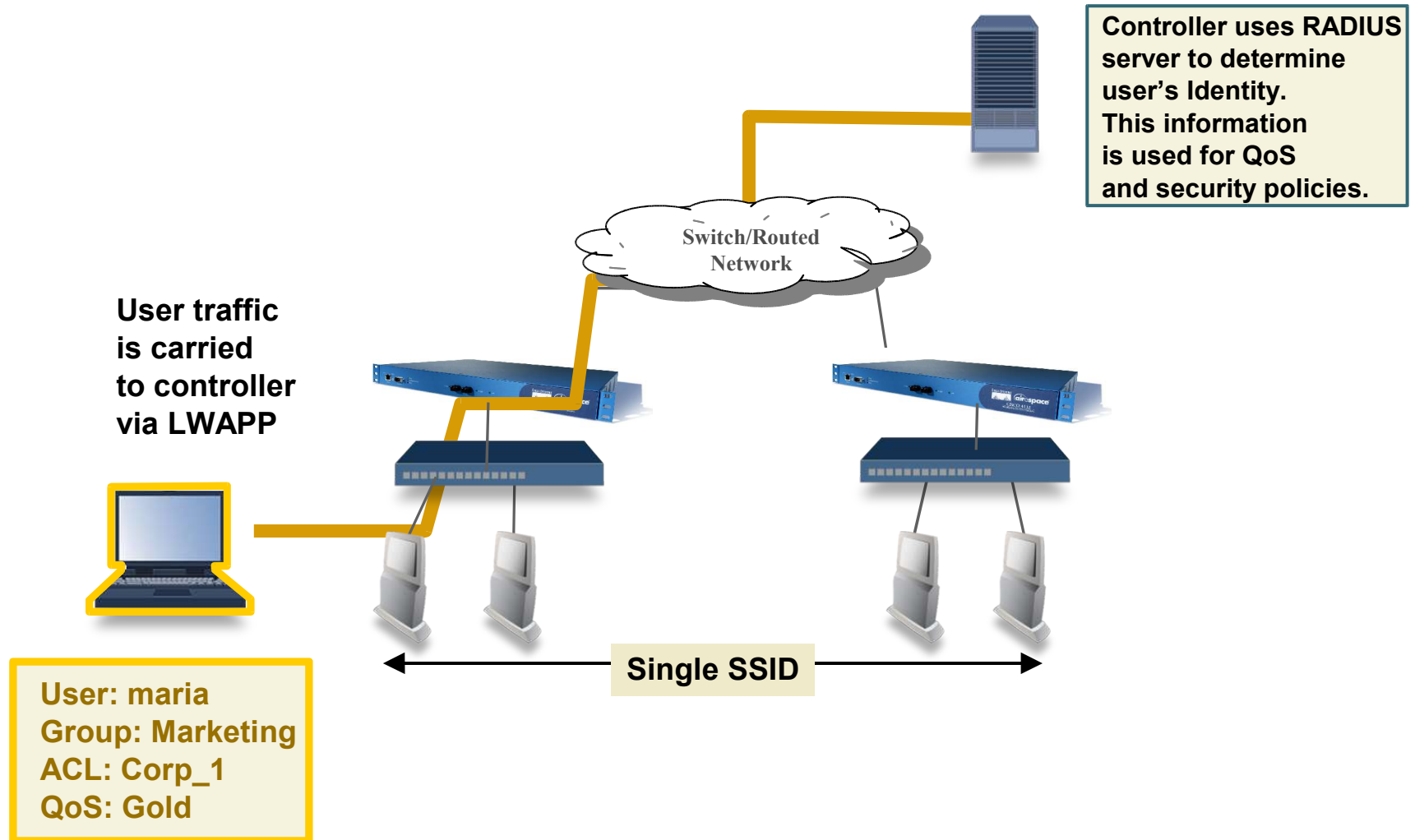
Dynamic Load Sharing



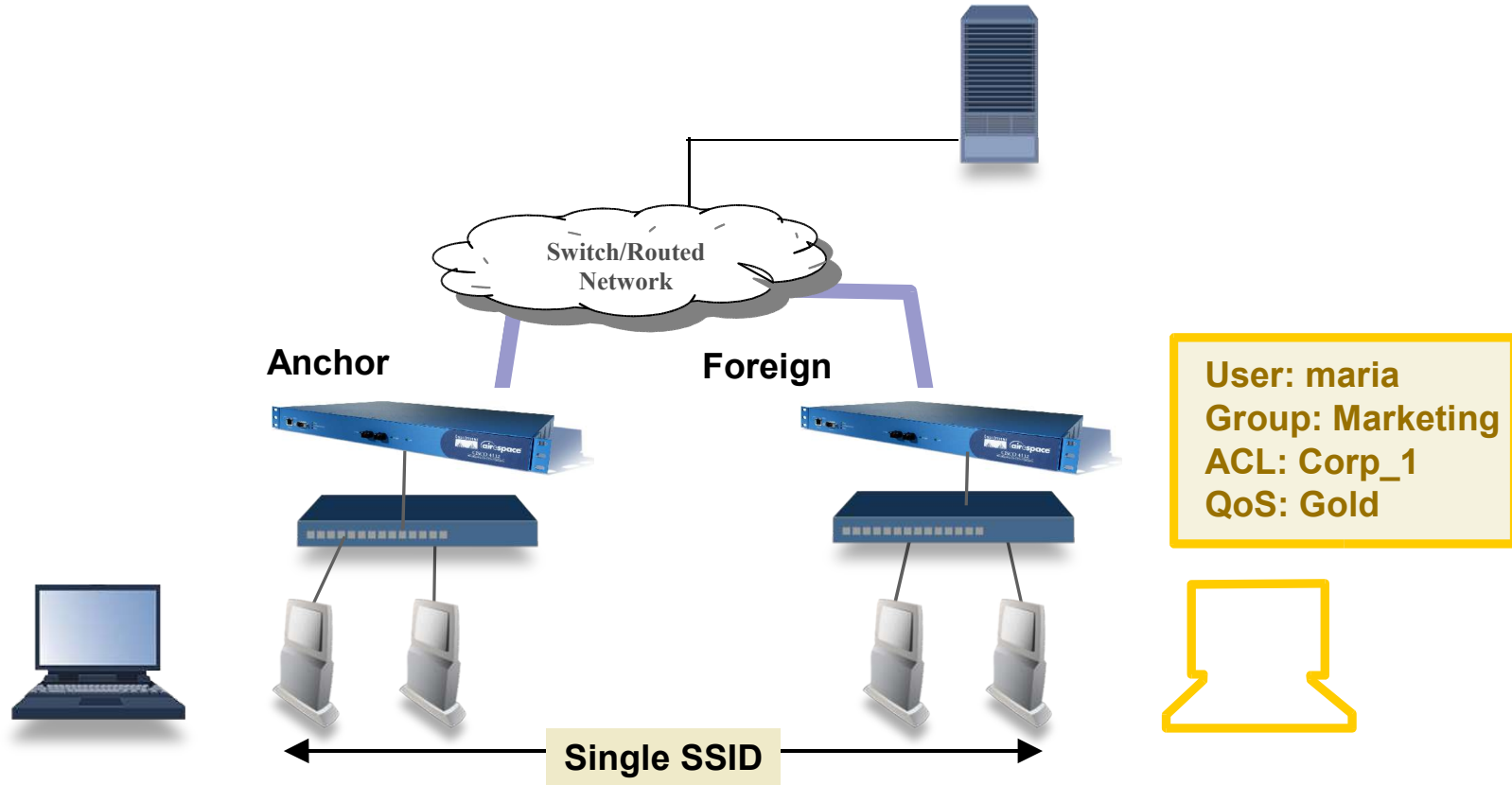
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Seamless Mobility



Seamless Mobility

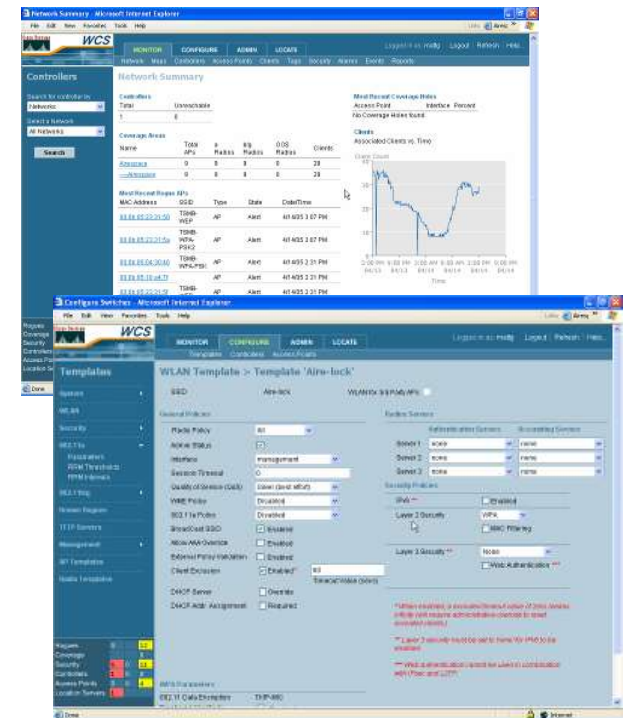


Controller clustering enables context information to follow users as they roam

Cisco Wireless Control System (WCS)

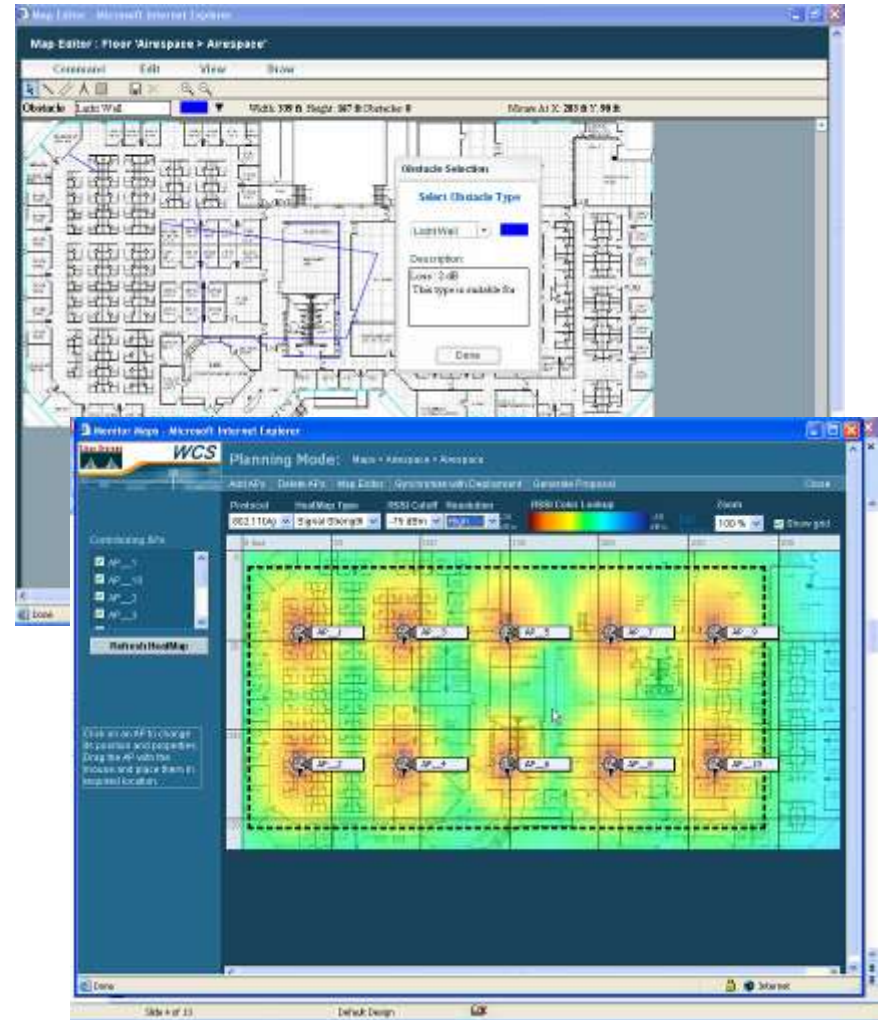
Industry Leading WLAN Systems Management

- A complete platform for system-wide WLAN management
- Real-time visibility and control of the entire air space
 - Customizable templates for easy policy creation and applications
- Unified policies that are centrally managed and enforced
 - Works in conjunction with WLAN controllers
 - Manage everything from remote offices to main campuses as a single system
- Cisco WCS is optional, but highly recommended when:
 - Multiple controller are deployed, supporting numerous APs
 - Advanced WLAN services are deployed (IDS, IPS, location, voice, etc ...)



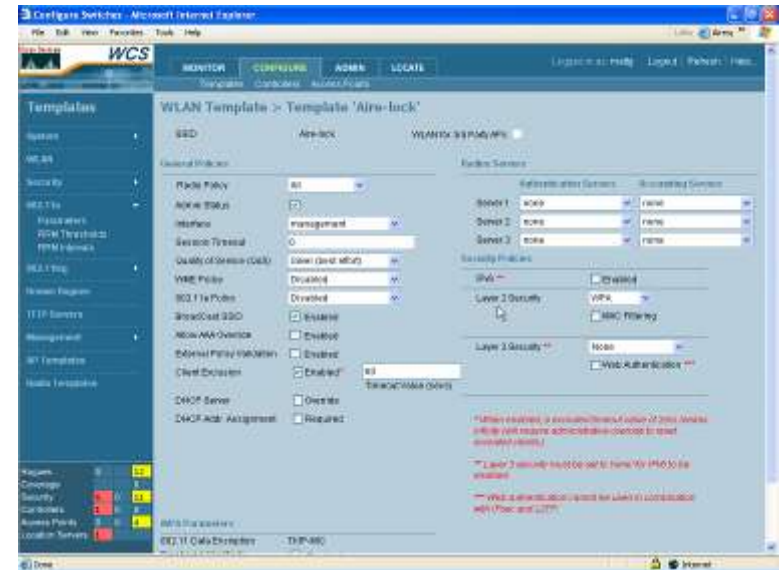
Built-In WLAN Planning and Monitoring

- Optimize WLAN design for coverage or performance
- Assign RF characteristics to building material
- Integrated floor plan editor
- Cisco WCS suggests optimal AP placement and graphically displays expected coverage area
- Printable reports
- Minimize the need for manual site survey



WLAN Configuration

- Create templates for multiple unique SSIDs
 - Independent of controllers or APs
- System-wide security configuration
 - 802.1X, RADIUS, IPsec, L2TP, ...
- System-wide QoS policies
 - 802.11e, WME, ...
- Define controller mobility groups for seamless roaming
- Establish Radio Resource Management (RMM) thresholds and measurement intervals
- Configure back-end services
 - NTP, AAA, (Future NAC)



Device Management

- **WLAN Controllers**
 - Link status
 - Traffic and usage statistics
 - APs being serviced
 - Software upgrades
- **Access Point**
 - Utilization statistics
 - Transmit power and channel assignments
- **Client**
 - State information (associated, authenticated, probing, etc.)
 - Link status
 - Search by address (IP/MAC), name, category; etc.

Controller Summary

Access Points	MAC Address	Port	Status
EBC	00:00:85:00:00:20	2	Yellow
TH	00:00:85:00:01:00	2	Yellow
SR	00:00:85:00:02:00	2	Green
LCAC	00:00:85:00:03:00	2	Yellow
SR	00:00:85:00:04:00	2	Yellow
SR	00:00:85:00:04:00	2	Yellow
SR	00:00:85:00:10:00	2	Yellow
SR	00:00:85:00:11:00	2	Green

Access Points Summary

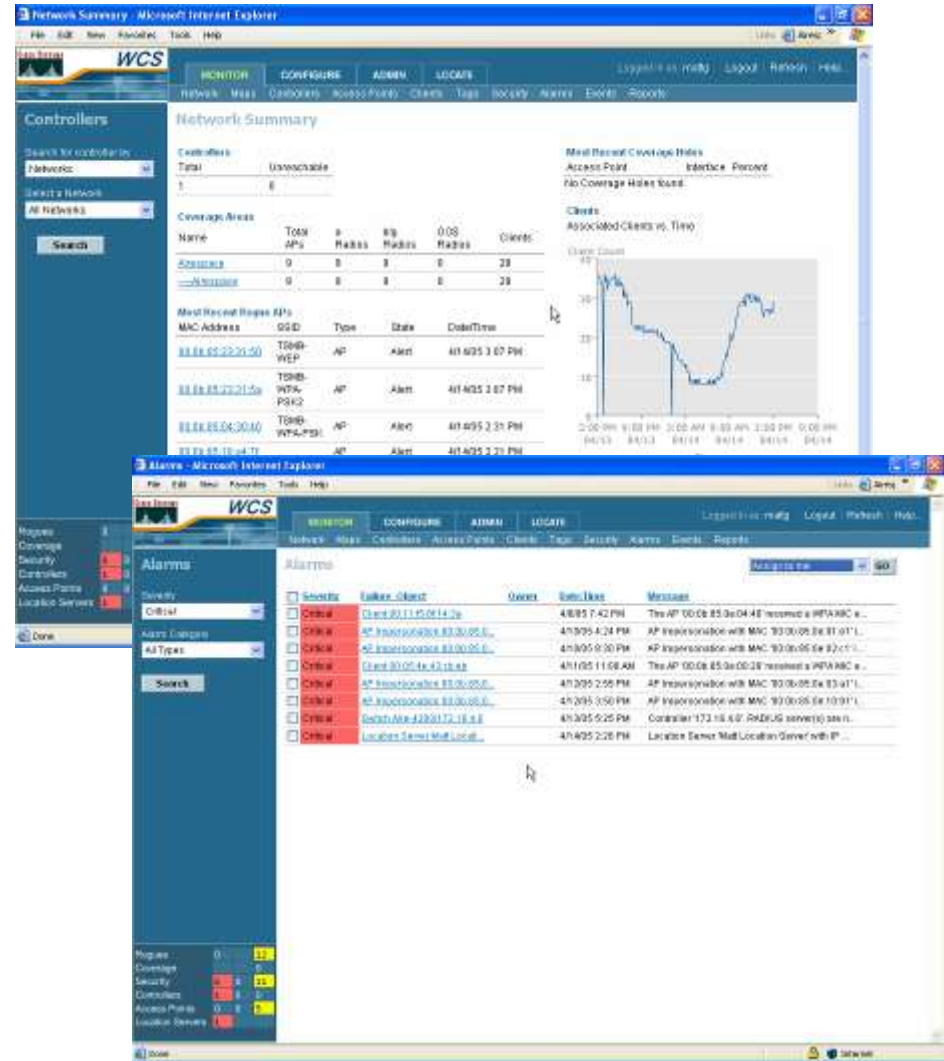
AP Name	AP MAC Address	AP IP Address	Admin Status	Operational Status	Registered Controller	Primary Controller	Port Number	Map Location	Statistics Time
EBC	00:00:85:00:00:20	0.0.0.0	Enable	Registered	172.16.4.6		2	Unassigned	166

Inventory Information

AP Model	AP Type	AP Serial Number
ap-1288	AP 5312	

Monitoring and Troubleshooting

- Graphical heat maps display coverage area
- Real-time network dashboards
 - Excluded clients
 - Client and AP performance over time
- Alarms
 - Rogue devices, identified by MAC address, vendor, RSSI, # clients, SSID, location, etc.
 - IDS attacks
 - RF management thresholds (interference, noise, coverage holes)
 - Alarm assignment and automated notification



Wireless Intrusion Protection

- **Detect common RF-related attacks**
 - Netstumbler, wellenreiter, void11, FakeAP, address spoofing, DoS, etc.
- **Customizable attack signatures**
- **Real-time 24x7 monitoring and alarming**
- **Rogue AP detection, location, and containment**
 - Identify known (i.e. “trusted”) rogues
- **Create client exclusion lists**



Location Tracking

- RF fingerprinting for highly accurate device tracking
- No additional devices required for air monitoring
- Cisco WCS with location tracks a single device (on demand)
 - Client, tag, rogue AP, rogue client
- Integrates with Cisco Wireless Location Appliance



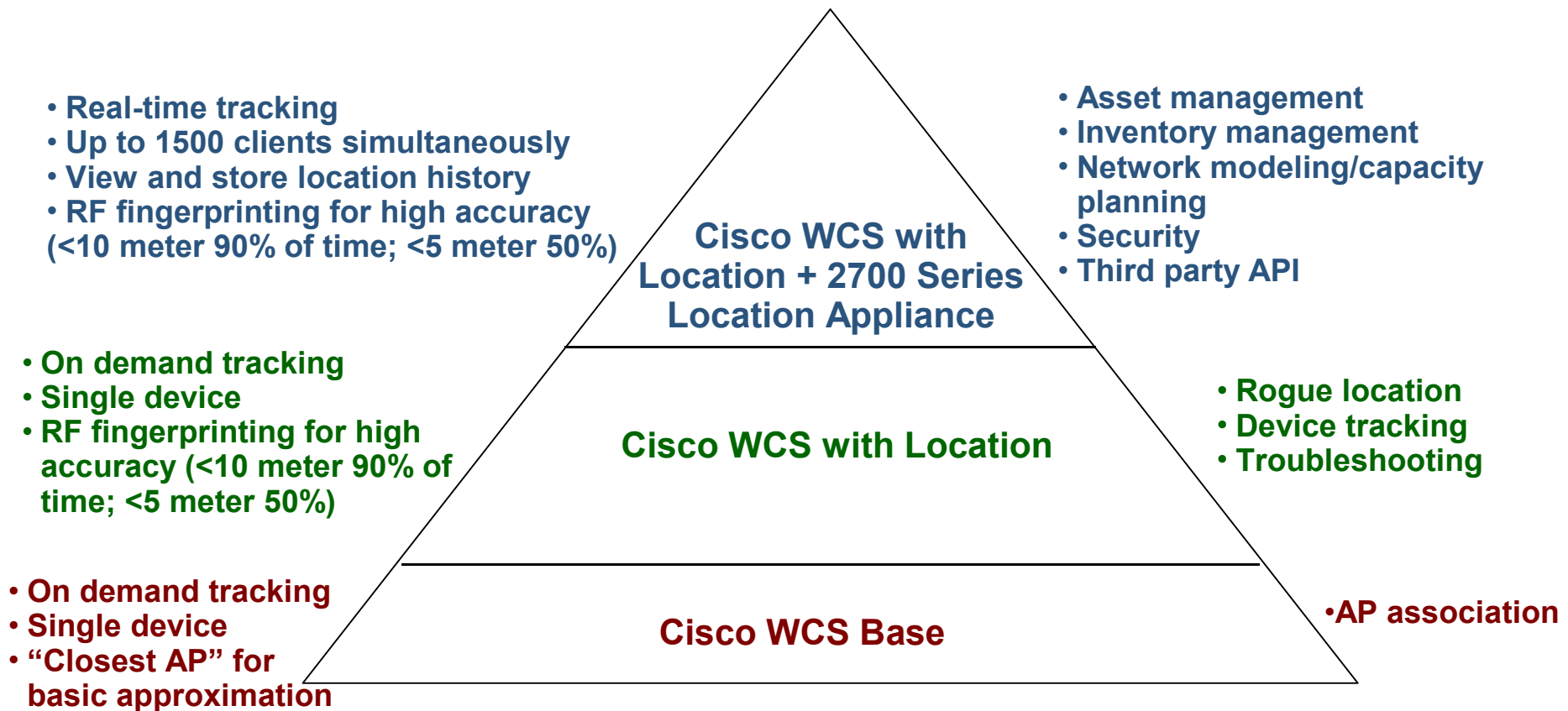
Cisco Wireless Location Appliance

- Industry's 1st Integrated Location Solution
- Real-time Location Services
- Advanced RF Fingerprinting
 - High accuracy location resolution within a few meters
 - Granular rogue detection
- Simultaneous real-time tracking of thousands of devices
- API Third Party Applications
- RF capacity management and historical location trending
- Intuitive management through Cisco WCS GUI

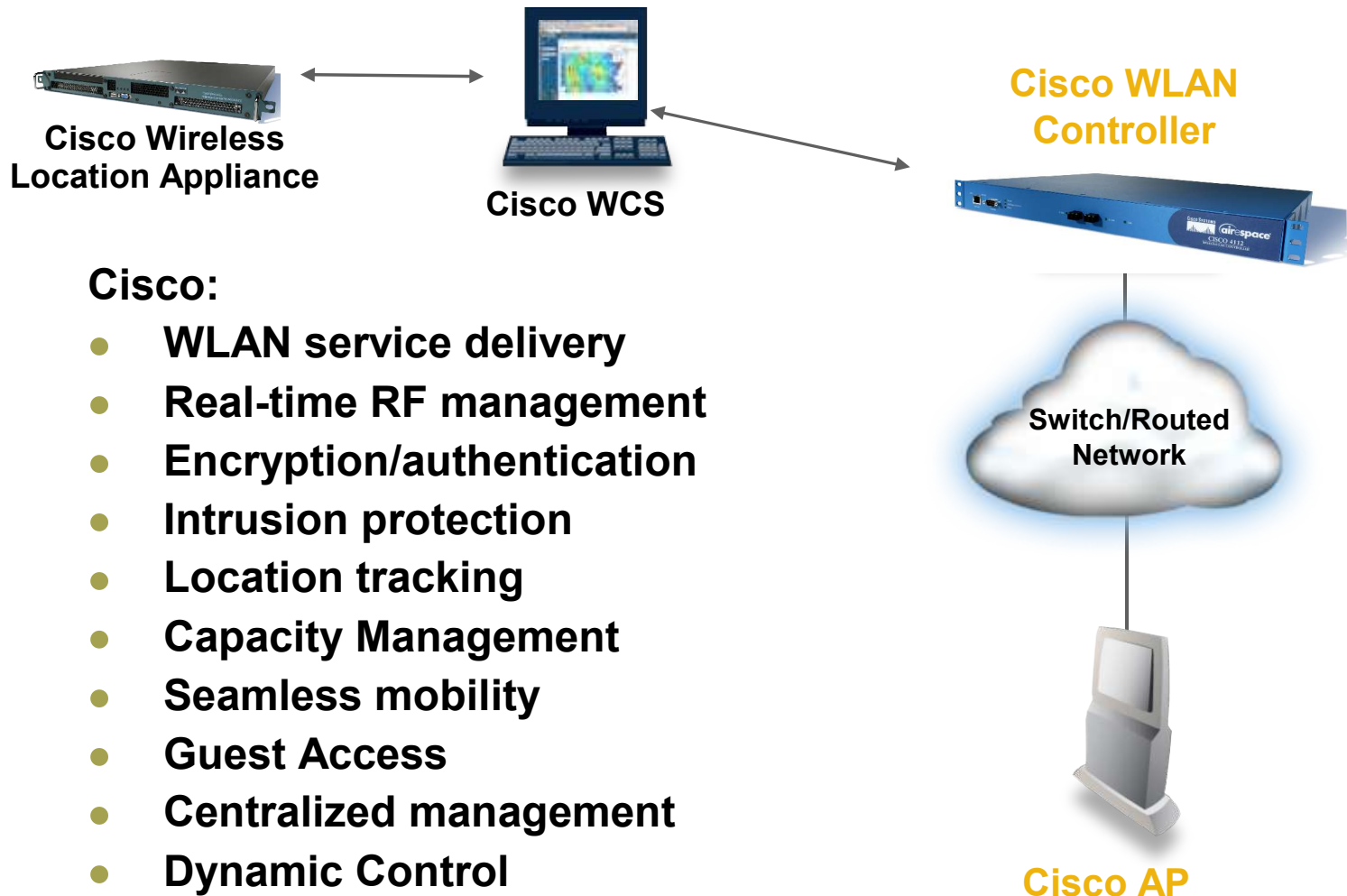


Cisco 2700 Series Wireless Location Appliance

Cisco Location Tracking Options



A Single Integrated WLAN System



Summary

Cisco Centralized WLAN Solution

- **Dynamic, Self-managed RF Optimization**
- **Zero-touch Deployment and Policy-based management**
- **Integrated IDS and IPS**
- **Fast Secure L2/L3 Roaming with Proactive Key Caching**
- **Guest Access Services**
- **Future Plans CY 05/06:**
 - **New integrated Controller modules End CY 05 for Catalyst 6k family**
 - **Cisco Compatible Extensions Support**
 - **Optional LWAPP support on 1100, 1130, 1200, 1230 and 1300 APs, in addition to 1000 Series**
- **Ongoing integration with key Cisco networking elements (and partners)**
 - **Security: ACS, NAC, firewall, ...**
 - **Management: CiscoWorks LAN Management, HP Openview, ...**
 - **Applications: voice, location, ...**

Cisco.com - Additional Information

- **1000 Series Lightweight Access Point**
<http://www.cisco.com/en/US/products/ps6306/index.html>
- **2000 Series Wireless LAN Controller**
<http://www.cisco.com/en/US/products/ps6308/index.html>
- **4100 Series Wireless LAN Controller**
<http://www.cisco.com/en/US/products/ps6307/index.html>
- **Cisco Wireless Control System (WCS)**
<http://www.cisco.com/en/US/products/ps6305/index.html>
- **Cisco Wireless Location Appliance**
<http://www.cisco.com/en/US/products/ps6386/index.html>

